

REMARKS

Claims 1-28 remain pending in the application.

The Applicants respectfully request the Examiner to reconsider earlier rejections in light of the following remarks. No new issues are raised nor is further search required as a result of the changes made herein. Entry of the Amendment is respectfully requested.

Claims 1-3, 8, 9, 14, 22-24, 27 and 28 over Park in view of AAPA

In the Office Action, claims 1-3, 8, 9, 14, 22-24, 27 and 28 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park, U.S. Patent No. 5,502,217 ("Park") in view of Applicants' Admitted Prior Art ("AAPA"). The Applicants respectfully traverse the rejection.

Claims 1-3, 8, 9, 14, 23 and 24 recite, *inter alia*, an echo canceler module that is configurable as an acoustic echo canceler for use in a **first wireless device** **and** a hybrid echo canceler is configurable for use in a **second wireless device**. Claims 22, 27 and 28 recite, *inter alia*, operating an echo canceler module as an acoustic echo canceler if the echo canceler module is utilized in a **first wireless device** **and** operating the echo canceler module as a hybrid echo canceler if the echo canceler module is utilized in a **second wireless device**.

Park appears to disclose echo time cancellation determined in a full duplex system by providing an echo time determiner which samples signals on either a transmit path or a receive path (Abstract). The determiner may be used for electrical cancellation, i.e., coupled to the receive path (Park, col. 3, lines 57-59). Conversely, the determiner may be used for acoustic echoes only, a sampler would receive inputs from the transmit path (Park, col. 3, lines 59-61). An acoustic echo canceller is connected to a speakerphone system within a teleconferencing system hardwired to a PSTN (Park, col. 1, lines 12-24). The hybrid echo canceler is connected to a telephone line interface within the teleconferencing system (Park, col. 1, lines 29-38).

The Office Action correctly acknowledged that Park fails to disclose application of an echo canceler in a wireless device (Office Action, page 3).

However, the Office Action relies on AAPA to allegedly make up for the deficiencies in Park to arrive at the claimed invention. The Applicants respectfully disagree.

AAPA discloses a cordless telephone that has a dedicated design acoustic echo canceler for use in a handset and a dedicated design hybrid echo canceler for use in a base unit, both part of a cordless telephone system (Fig. 6; page 3, line 11-page 4, line 6).

Park's acoustic echo canceler is configured for operation in a single device, i.e., a speakerphone within a teleconferencing system. An echo canceler module that is configurable for use within a single device is **NOT** an echo canceler that is configurable for use within two devices, much less an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device **and** as a hybrid echo canceler for operating in a second wireless device, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

AAPA discloses an acoustic echo canceler that is a dedicated design to a handset and a hybrid echo canceler that is dedicated design to a base unit. Alternately, AAPA discloses that, in the event of a combined requirement of both an acoustic echo canceler and a hybrid echo canceler within the same unit, i.e., Park, manufacturers typically customize a combined hybrid echo canceler and acoustic echo canceler for use with the particular application, i.e., Park. AAPA fails to disclose or suggest a configurable echo canceler module for use in two devices, much less an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device **and** as a hybrid echo canceler for operating in a second wireless device, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

Neither Park nor AAPA, either alone or in combination, disclose, teach or suggest an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device **and** as a hybrid echo canceler for operating in a second wireless device, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

Having an echo canceler that is configurable for use in a **first** and **second** wireless device allows, e.g., minimizing production costs.

Conventionally, two production units are produced by manufacturers for requirements using either an acoustic echo canceler and a hybrid echo canceler. Applicants' invention allows a single unit to be produced for both application, with the single unit being configurable for its intended application. Production of a single unit that is versatile enough to be used in more than one application potentially reduces production costs. Park and AAPA, either alone or in combination, fail to disclose or suggest such a benefit.

Accordingly, for at least all the above reasons, claims 1-3, 8, 9, 14, 22-24, 27 and 28 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Claims 6, 7 and 15-26 over Park in view of AAPA and Iyengar

In the Office Action, claims 6, 7 and 15-26 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Iyengar, U.S. Patent No. 5,663,955 ("Iyengar"). The Applicants respectfully traverse the rejection.

Claims 6, 7, 23 and 24 are dependent on claim 1, and are allowable for at least the same reasons as claim 1.

Claims 6, 7, 23 and 24 recite, *inter alia*, an echo canceler module that is configurable as an acoustic echo canceler for use in a **first wireless device** **and** a hybrid echo canceler is configurable for use in a **second wireless device**. Claims 15-22, 25 and 26 recite, *inter alia*, operating an echo canceler module as an acoustic echo canceler if the echo canceler module is utilized in a **first wireless device** **and** operating the echo canceler module as a hybrid echo canceler if the echo canceler module is utilized in a **second wireless device**.

As discussed above, neither Park nor AAPA, either alone or in combination, disclose, teach or suggest an echo canceler module that is configurable as an acoustic echo canceler for operating in a **first wireless device** **and** as a hybrid echo canceler for operating in a **second wireless device**, as recited by claims 6, 7 and 15-26.

The Office Action relies on Iyengar to allegedly make up for the deficiencies in Park in view of AAPA to arrive at the recited invention. The Applicants respectfully disagree.

Iyengar appears to disclose an echo canceler system that includes first and second echo cancelers (Abstract). In a loudspeaker telephone set with full-duplex operation, an acoustic path arises between a loudspeaker and a microphone, and a line echo path arises at a hybrid transformer which connects a set's four-wire system to a two-wire local customer loop (Iyengar, col. 3, lines 30-34). A first echo canceler is used for canceling a line echo, and a second echo canceler is used for canceling acoustic echo (Iyengar, col. 3, lines 34-36).

Iyengar discloses application of a echo canceler system that includes first and second echo cancelers for a loudspeaker telephone set. A loudspeaker telephone set, i.e., a single device, that uses two echo cancellers, i.e., first and second echo cancellers is **NOT** an echo canceler, i.e., a single element, that is configurable between two modes of operation, much less an an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device **and** as a hybrid echo canceler for operating in a second wireless device, as recited by claims 6, 7 and 15-26.

Neither Park, AAPA nor Iyengar, either alone or in combination, disclose, teach or suggest an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device **and** as a hybrid echo canceler for operating in a second wireless device, as recited by claims 6, 7 and 15-26.

Accordingly, for at least all the above reasons, claims 6, 7 and 15-26 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Claims 12, 13 and 21 over Park in view of AAPA, Velardo and Danstrom

In the Office Action, claims 12, 13 and 21 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Velardo et al., U.S. Patent No. 5,587,998 ("Velardo"), and still

further in view of Danstrom, U.S. Patent No. 4,582,963 ("Danstrom"). The Applicants respectfully traverse the rejection.

Claims 12, 13 and 21 are dependent on claims 1 and 15 respectively, and are allowable for at least the same reasons as claims 1 and 15.

Claims 12 and 13 recite, *inter alia*, an echo canceler module that is configurable as an acoustic echo canceler for use in a first wireless device **and** a hybrid echo canceler is configurable for use in a second wireless device. Claim 21 recites, *inter alia*, operating an echo canceler module as an acoustic echo canceler if the echo canceler module is utilized in a first wireless device **and** operating the echo canceler module as a hybrid echo canceler if the echo canceler module is utilized in a second wireless device.

As discussed above, Park in view of AAPA fails to disclose or suggest an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device **and** as a hybrid echo canceler for operating in a second wireless device, as recited by claims 12, 13 and 21.

The Office Action relies on Velardo and Danstrom to allegedly make up for the deficiencies in Park and AAPA to arrive at the recited invention. The Applicants respectfully disagree.

Velardo appears to disclose a method and apparatus for reducing, in a communication signals received by a local network from a remote network, energy content attributable to echoes of signals transmitted into a local network (Velardo, Abstract). Selective regulation of individual frequency sub-bands leads to higher operational stability and better voice quality than are achieved using conventional, fullband nonlinear processors for reducing echo (Velardo, col. 5, lines 18-22).

Danstrom appears to disclose a telephone echo canceling circuit employing a digital transversal filter which adapts to incorporate an impulse response (Abstract). The initial zero response created by transmission delays are ignored through the use of a memory that holds signal samples for this period (Danstrom, col. 2, lines 16-47).

Velardo discloses selective regulation of individual frequency sub-bands. Selective frequency regulation is **NOT** an echo canceler that is

configurable between two modes of operation, much less an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device and as a hybrid echo canceler for operating in a second wireless device, as recited by claims 12, 13 and 21.

Danstrom discloses an echo canceling circuit that is able to ignore an initial zero response. Danstrom fails to disclose an echo canceler that is configurable between two modes of operation, much less an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device and as a hybrid echo canceler for operating in a second wireless device, as recited by claims 12, 13 and 21.

Neither Park, AAPA, Velardo nor Danstrom, either alone or in combination, disclose, teach or suggest an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device and as a hybrid echo canceler for operating in a second wireless device, as recited by claims 12, 13 and 21.

Accordingly, for at least all the above reasons, claims 12, 13 and 21 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Claims 4, 5, 10, 11, 17 and 20 over Park in view of AAPA, Iyengar, Velardo and Sih

In the Office Action, claims 4 and 5 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Sih, U.S. Patent No. 5,687,229 ("Sih"). Claims 10 and 11 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Velardo and Sih. Claim 17 was rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Iyengar and Sih. Claim 20 was rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Iyengar and Sih.

Claims 4, 5, 10, 11, 17 and 20 are dependent on claims 1 and 15 respectively, and are allowable for at least the same reasons as claims 1 and 15.

Claims 4, 5, 10 and 11 recite, *inter alia*, an echo canceler module that is configurable as an acoustic echo canceler for use in a first wireless device **and** a hybrid echo canceler is configurable for use in a second wireless device. Claims 17 and 20 recite, *inter alia*, operating an echo canceler module as an acoustic echo canceler if the echo canceler module is utilized in a first wireless device **and** operating the echo canceler module as a hybrid echo canceler if the echo canceler module is utilized in a second wireless device.

As discussed above, neither Park, AAPA, Iyengar and Velardo, either alone or in combination, disclose, teach or suggest an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device **and** as a hybrid echo canceler for operating in a second wireless device, as recited by claims 4, 5, 10, 11, 17 and 20.

The Office Action relies on Sih to allegedly make up for the deficiencies in Park, AAPA, Iyengar and Velardo to arrive at the recited invention. The Applicants respectfully disagree.

Sih appears to disclose a method of controlling echo canceling in an echo cancellation system using a state machine controller (Abstract). The echo canceler includes a state machine which is configured into a predetermined state of a plurality of states depending on a presence near-end speech signal, far-end speech signal, or both near-end and far-end speech signals (Sih, Abstract). Based on a predetermined state of the state machine, the controller in the state machine controls the update of coefficients of a plurality of adaptive filters (Sih, Abstract). To preserve echo filter coefficients of a echo canceler filter, a variable adaptation threshold is used to switch on and off adaptation of the echo canceler filter (Sih, col. 13, lines 29-32).

Sih discloses an echo canceler using a plurality of adaptive filters for use in a single device. An echo canceler for use in a single device is **NOT** an echo canceler that is configurable for use in a first and second device, much less an echo canceler module that is configurable as an acoustic echo canceler for operating in a first wireless device **and** as a hybrid echo canceler for operating in a second wireless device, as recited by claims 4, 5, 10, 11, 17 and 20.

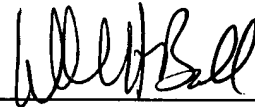
Neither Park, AAPA, Iyengar, Velardo nor Sih, either alone or in combination, disclose, teach or suggest an echo canceler module that is configurable as an acoustic echo canceler for operating in a **first wireless device** **and** as a hybrid echo canceler for operating in a **second wireless device**, as recited by claims 4, 5, 10, 11, 17 and 20.

Accordingly, for at least all the above reasons, claims 4, 5, 10, 11, 17 and 20 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Conclusion

All objections and rejections having been addressed, it is respectfully submitted that the subject application is in condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,



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